

REMARKS

Claims 1-26 are pending. New claim 26 has been added.

New claim 26

Claims 1-25 were rejected under § 103(a) as being unpatentable over various combinations of U.S. Patent No. 5,619,034 to Reed et al. ("Reed"), U.S. Patent No. 6,107,625 to Park ("Park '625"), U.S. Patent No. 5,753,909 to Park et al. ("Park '909"), U.S. Patent No. 5,464,985 to Cornish et al. ("Cornish"), U.S. Patent No. 5,331,158 to Dowell ("Dowell"), and Applicant's admitted prior art. Each rejection depends on the combination of Reed and Park '625. As the PTO recognizes in MPEP § 2143, "[t]o establish a prima facie case of obviousness, ... the prior art reference (or references when combined) must teach or suggest all the claim limitations." Furthermore, under MPEP § 2142, "[i]f the examiner does not produce a prima facie case, the applicant is under no obligation to submit evidence of nonobviousness." It is submitted that the cited references do not factually support a prima facie case of obviousness for the following reasons.

Reed is directed to increasing throughput by sending several ion packets through an instrument so that ion packets are created before the preceding packets have reached the detector - that is, there can be several packets at different points in the path between the source and detector at any given time. (Abstract; col. 4, line 34 - col. 5, line 16). Each packet is, however, formed from a separate ionization event. (Col. 4, line 34 - col. 5, line 16). Interference (e.g., faster ions from a faster packet catching up with slower ions from the preceding packet) is avoided by rastering the ionization point source and detection point on the detector. (See, e.g., Fig. 3 and associated text). This entails more than one ion beam path, but each path originates from a separate point on the source (and, therefore, is a separate ionization event). Thus, Reed neither discloses nor suggests using differences in the time of flights. In fact, Reed teaches away from Applicant's invention because, as the packets in Reed arrive from separate events, it would be pointless to determine the differences in flight time since it is only with ions formed from the same event where there is any benefit.

Park '625 is directed to improving the resolution of a mass spectrometer by extending the distance that the ion beam travels without increasing the physical length of the instrument.

(Abstract; col. 9, lines 21-28). This appears to be achieved by the use of reflectrons to reflect the ions across the instrument several times before allowing them to strike the detector.

(Abstract). The ions travel back and forth on the same axis, but the ions from each ionization event are detected only once on a single detector. (See, e.g., Fig. 3 and associated text).

Reflectrons are well known in the art and Applicant fails to see any relevance of the reflectrons of Park '625 to Applicant's present disclosure.

In summary, neither Reed nor Park '625, alone or in combination, teach or suggest an ion beam generated from a single ionization event split into two beams that are detected at different distances from the source. Accordingly, neither reference teaches or suggests detecting a share of an ion beam on each of two detectors, wherein the difference or average differences in the time of flights for any or all ions of a given m/z to each of the two detectors is used for improving the accuracy of measurement of the m/z values of ions. Furthermore, none of the other cited references cure the deficiencies of Reed and Park '625. Therefore, new claim 26 is allowable over the cited references.

Conclusion

It is respectfully submitted that independent claims 1, 14, 15, 17, 23, and 26 are in condition for allowance. Dependent claims 2-13, 16, 18-22, 24, and 25 depend from and further limit their respective independent claims. Applicant respectfully submits that these claims are allowable as well. Notice of allowance of all pending claims is hereby requested.

Should the Examiner deem that any further amendment is needed to place this application in condition for allowance, the Examiner is invited to telephone the undersigned at the below listed telephone number.

Respectfully submitted,

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